Kenya
STATE OF THE CITIES

South Sudan

Ethiopia

Mandera

Moyale

Mandera

Turkana

Lodwar

Marsabit

Marsabit

Uganda

West Pokot

Wajir

Wajir

Samburu

Somalia

Trans-Nzoia

Isiolo

Busia

Eldoret

Isiolo

Meru

Siaya

Nanyuki Meru

Kabuti Londiani

Nyahururu

Kisumu

Nakuru

Kerugoya

Garissa

Homa Bay

Gilgil

Embu

Sagana

Garissa

Bomet

Naivasha

Thika

Migori

Narok

Kitui

Mavoko

Kitui

Tana River

Kajiado

Lamu

Kajiado

Lamu

○	Cities and Towns
●	Cities Under the Project
	Rail Roads
	Main Roads
	Lakes
	International Boundaries

Namanga

Voi

Malindi

Tanzania

Kilifi

Kilifi

Indian Ocean

Mombasa

Kwale

Mombasa

Kwale

Kilometers

0 25 50 100 150 200
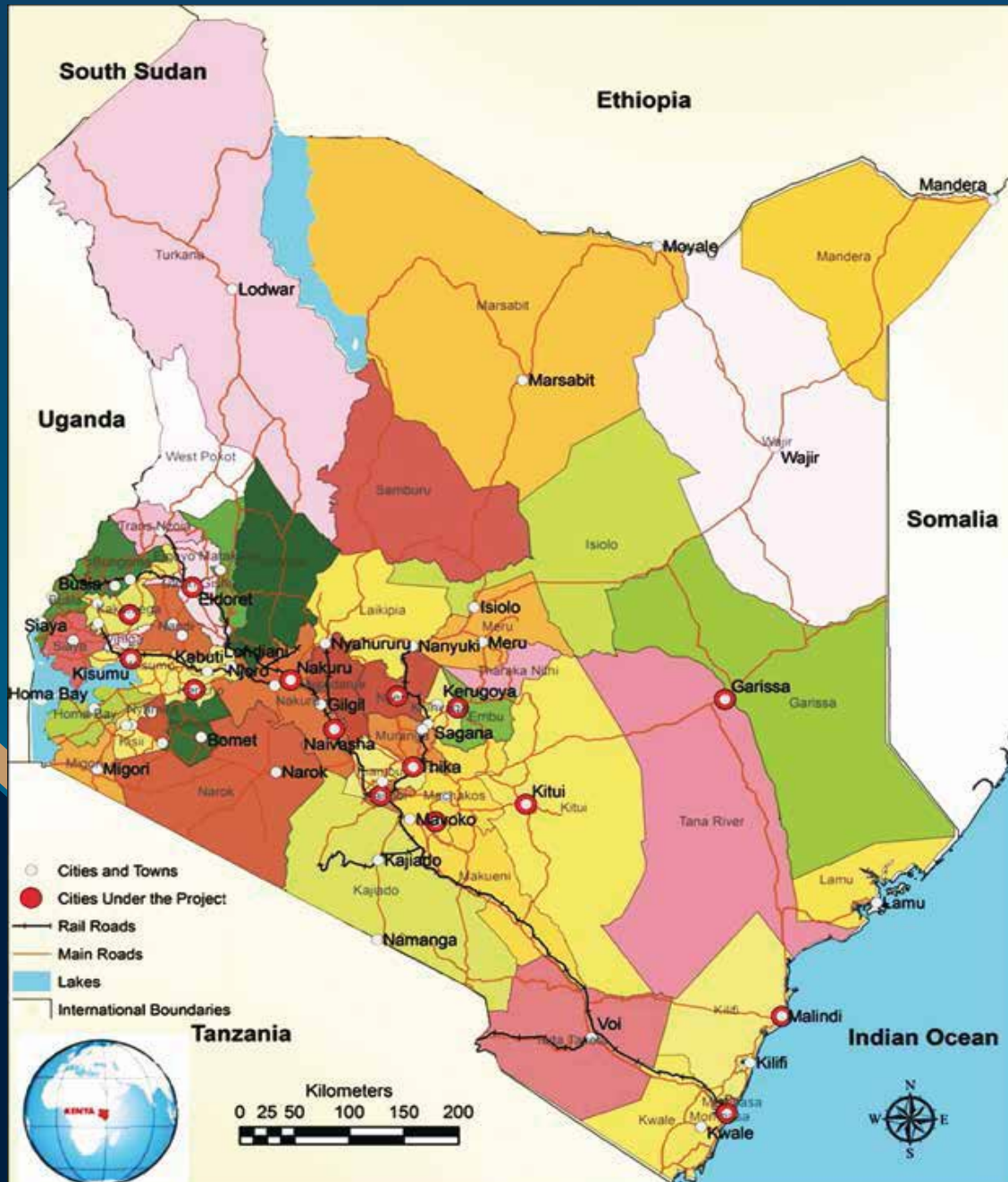
KISUMU

KENYA STATE OF THE CITIES BASELINE SURVEY

STATISTICAL ABSTRACT FOR KISUMU, KENYA

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ABBREVIATIONS

CAPI	Computer Assisted Personal Interview
EA	Enumeration area
GOK	Government of Kenya
HH	Household
HUD	U.S. Department of Housing and Urban Development
KIHBS	Kenya Integrated Household Budget Survey
KISIP	Kenya Informal Settlements Improvement Program
KMP	Kenya Municipal Program
KNBS	Kenya National Bureau of Statistics
NMSP	Nairobi Municipal Service Project
PDA	Personal Digital Assistant, in this case a hand held computer used by interviewers
PSU	Primary Sampling Unit
SMSA	Standard Metropolitan Statistical Area
SRS	Simple Random Sample
SSU	Secondary Sampling Unit
WB	World Bank
WBG	World Bank Group

ACKNOWLEDGEMENTS

INTRODUCTION

Background

The Kenyan government, with the support of development partners, is increasing its investments in urban infrastructure and services. To support these efforts, the World Bank has contracted NORC at the University of Chicago to carry out a baseline study of the demographic, infrastructure, and economic profiles of fifteen Kenyan municipalities: Nairobi City, Mombasa, Naivasha, Nakuru, Malindi, Eldoret, Garissa, Embu, Kitui, Kericho, Thika, Kakamega, Kisumu, Machakos, and Nyeri. This was undertaken in order to deepen understanding of the cities' growth dynamics, and to identify specific challenges to quality of life for residents. The study, called the "Kenya State of the Cities Baseline Survey," collects and analyzes household survey data to produce key statistics and identify differences in conditions among types of households—especially differences between those living in informal versus formal settlements. The ultimate goal is to use the information to establish development priorities for infrastructure and service investments and, eventually, to track the effectiveness of these investments.

Prior to the state of the cities survey, there were little data available to support the design of programmes to improve infrastructure and related services in most Kenyan cities. While there have been several household surveys of Nairobi's informal settlements and numerous analyses using the data, few surveys or analyses have been carried out in other Kenyan municipalities or for modest-income areas in Nairobi.

To facilitate access to the rich datasets generated by the survey, three written products were commissioned: a Statistical Abstract (such as this one) for each city, a City-at-a-Glance for each city (a two-page summary of the Abstract), and an Overview Report (a more comprehensive discussion of the topics in this introduction, a topic-by-topic comparative analysis of the fifteen cities, and appendices with the survey instrument). The abstract's objective is to provide comprehensive but easily accessible information on the wide range of municipal conditions covered in the survey, as reported by households. Some information in the abstract also comes from secondary sources, such as the national census and the Kenya Integrated Household Budget Survey (KIHBS). The primary audience for the abstract includes policy makers, development practitioners, development partners, civil society organizations, and urban residents. Better planning and more productive investments can result from exploiting the information in each city's abstract.

Methodology

For this baseline household survey, NORC used a two and three-stage, stratified, clustered sampling design intended to be representative of poor and non-poor households living in formal and informal settlements in the fifteen cities included in the study. The first-stage sampling frame was based on Kenya's 2009 census frame of enumeration areas (EAs). In the census sample frame, EAs are identified as urban, peri-urban or rural. EAs are further identified as containing formal or informal settlement types. For the first stage sampling, NORC selected EAs from strata identified as informal (slum), urban-formal, peri-urban-formal and rural. In cases where the EAs were "large" (200 to 700 households), they were divided in half, thirds, or quarters and one segment was randomly selected.

For the final stage of sampling, NORC carried out a full household listing in each selected EA (or segment, as the case may be) and randomly selected ten households for interviewing.[1] Because expected response rates were unknown prior to data collection, interviewers were given a target to complete at least seven interviews in each EA. In Kisumu, 107 EAs were selected in the first stage.[2] In the second stage, a total of 8,342 households were listed and 1,040 households were selected.

The data for this report are based on 740 completed interviews carried out in Kisumu from July 14, 2012 to October 12, 2012 by a team of eight interviewers and one supervisor. Among eligible households,[3] the completion rate was 67.68%.[4] Data collection took place in both formal and informal settlements simultaneously; 370 interviews were completed in informal and 370 were completed in formal ones.

Questionnaire

The Kenya State of the Cities baseline questionnaire was developed iteratively using a base set of questions developed by the World Bank and refined to capture the key variables related to infrastructure access and municipal services of interest to the Kenyan government. The final fielded questionnaire is available in Volume II of the Overview Report. The household listing form and the questionnaire were programmed for use as a Computer-Assisted Personal Interview (CAPI) and both were carried out using 7-inch Samsung Galaxy Tab tablet computers which transmitted data to project servers via the mobile phone network. Interviewers used the tablet computers to capture GPS coordinates once during listing and again at the end of each interview.

Data Quality

Recorded administration time of the CAPI instrument showed a median duration of 29 minutes in Kisumu (21 minutes across all municipalities). However, duration values may have been compromised by transmission problems and supervisor reviews, which may have overwritten timestamps. Despite the uncertainty of exact durations, data quality measures do not show systematic interviewer-related errors in the final data. Approximately one-third of all interviews underwent validation, including call-backs by supervisors or central office staff (in-person and by phone).

Table Presentation

Each city's Abstract includes a set of tables designed to provide basic information on households' economic and demographic conditions, their housing conditions, and access to infrastructure and services. One challenge in preparing the Abstract was to provide a complete picture of conditions while still being selective in the information presented so as not to overwhelm the reader. A second challenge was to display the information in a way that permits stakeholders to understand conditions faced by different population groups.

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[1] A complete description of the sampling design is found in "Kenya Municipal Program State of Cities: Overview Report," NORC, August 2013.

[2] 106 EAs were included in the listing activity. One EA did not include any households and therefore was dropped from the sample.

[3] Eligible households are defined as occupied dwellings with at least one resident age 18 or older who is present during the field period.

[4] The completion rate is the number of households that successfully completed an interview over the total number of households assigned.

To meet these challenges we have developed a set of tables with items believed to be most important for stakeholders and have broken down the items in several ways. In addition to providing an overall picture of household (HH) characteristics, the tables illustrate whether household characteristics differ by key factors. The rows of each table generally list the household characteristics (e.g., size of household, percentage of children in school). The columns present statistics for the entire city, then show how the data differs by location (informal vs. formal areas), household poverty status (poor vs. non-poor), gender of the head of household (male vs. female headed, for informal areas only), as well as other factors pertinent to the particular table.[5]

From each table, one can quickly observe if there are large differences in household characteristics by location, spending power, etc., simply by comparing the cells (numbers). Each table also shows whether the observed differences are statistically significant.[6] "Statistically significant" means that statistical analysis has revealed that a difference, no matter how small or large, is unlikely due to chance or randomness. In practice, statistically significant differences are the ones researchers are interested in-they can be interpreted as telling us about meaningful differences in household characteristics by location, spending power, gender, or other category. When we discuss differences in the text of this report, we will refer to "statistically significant" differences unless otherwise noted.

In terms of policy decisions, whether differences matter is a combination of whether they are statistically significant and how large the differences are. Ultimately, it is up to the policy practitioner to decide how large a difference must be to matter in the context of interest. An important note when interpreting results is that statistical significance does not imply causality. In other words, if differences in values are statistically significant, this does not mean that one variable caused a change in the other variable. Another factor may be influencing both variables; for example, for we may find a "significant" difference between head-of-household education and household poverty, perhaps the key common cause is social status, which affects both their educational attainment and job/spending opportunities. Additionally, where a statistically significant difference is identified it does not imply the direction of the relationship. Perhaps the household poverty is the reason for the different education levels, or vice-versa. In this report, therefore, we will say a household characteristic is "associated with" or "correlated" with certain factors, rather than saying one is caused by another.

In order not to clutter the tables yet provide the reader with the maximum information, we mark statistically significant results in the tables with bold (for two adjacent values in the same row) and italics (to compare adjacent columns of data). Underlined values denote an insufficient number of household responses for some enumeration category of the sampling design to perform a test of statistical significance. The number of observations for a particular variable is noted in the tables in rows denoted by "N". Cells with no observations are indicated with hyphens (-).[7] The table, below, summarizes the formatting used in tables throughout the Abstract: A value that is both bold and italicized indicates statistically significant differences for two adjacent cells (i.e., values in the same row) as well as for the distributions between adjacent columns. In contrast, a value in standard font—no bolding, italics, or underlining-still means that a significance test was performed but that the values under comparison were not statistically significantly different from each other.

There is one caveat to the formatting rules that must be addressed regarding the significance testing of distributions. While the absence of italics sometimes means that the distribution was tested and was not found to be statistically significant, this is often not the case—i.e., there are many distributions which were not tested for significance. To avoid confusion, the comprehensive list of distributions which were tested for significance follows.

- **Table B.2a:** Expenditure ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)

- **Table B.2b:** Income ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)

- **Table C.3:** Distribution of home value ranges and rent ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)

- **Table D.1a:** Percent of households with a piped water connection inside their dwelling by security of ownership; percent of households with a piped water connection inside their compound by security of ownership; percent of households close to piped water access by security of ownership; cost of water by security of ownership; most important water source by security of ownership; reasons for no connection by security of ownership

- **Table D1.b:** Water source by water quality; water provider by water quality; water treatment buy water quality; treatment methods by water quality.

Another feature of the data worth mentioning is that outliers (responses that are very different from all the others) were not a major issue in the survey data, affecting just three variables in any important way.[8]

Finally, note that in tables presenting a distribution of responses, if some response categories are left out then the distribution will not add up to 100%. In cases where all response categories are listed then the first row of responses is given as 100. Unless otherwise noted, all figures presented in the tables are percentages.

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[8] Across all fifteen municipalities these were (i) home value, in which 20 responses were reported in millions units instead of as the value itself (so we simply divided these responses by a million); (ii) 40 respondents reported travel time for a weekly or monthly commute rather than a daily commute (these over-eight-hours responses were dropped); (iii) we removed one case in which the time to get water was over a week.

Table 1: Description of formats used to denote statistical significance

Format	When we use it	Example
Bold	Two bolded values in the same row next to each other indicate that the difference is statistically significant. We also use bold for 'Yes' or 'No' variables. If bold, it means that the difference between the mean of households that answered 'yes' (displayed) and the mean of those that answered 'no' (not displayed) is statistically significant.[a]	Table A.1 displays the mean household size for households located in formal and informal settlements; if the pair of values is bold, it means that the difference in household sizes between formal and informal areas is statistically significant. Table B.2 displays the proportion of households which own land (or have tenure) that fall below the poverty line. If bold, it means that this proportion is statistically significantly different from the proportion of households which do not own land that fall below the poverty line.
Italics	We indicate statistically significant differences between columns of three or more cells using italics; this means the difference between the entire distributions (columns) is statistically significant.[b]	Table B.2, Monthly household spending power, displays the distribution of households across income and expense ranges. If values appear italicized in both columns for households located in formal and informal settlements, the difference between the two distributions is statistically significant.
Underline	Denotes values where, due to lack of data at the census tract (enumeration area, or EA) level, it was not statistically possible to conduct the significance test.[c]	Table B.3 shows the mean value of households' primary residence with and without land, and of any other residence and/or land. An underlined value means that due to lack of data at the census tract level, it is not possible to perform a test for significant differences.
Hyphen (-)	In cases where there are no data for a cell at all, we note that with a hyphen (-).	Table B.3 shows data related to household finance. For the percentages of households according to source of financing, the cells that display a hyphen means that there were no observations for that particular variable and category.

Notes:
a. Here a p-test from an Adjusted Wald test is conducted.
b. Here Pearson's Chi-squared test is conducted.
c. At least two households are required to compute a household-level variance, which is required to conduct a hypothesis test. Note that this does not imply that the respective table values are based on just one household or even just one EA.

The core of this abstract comprises a set of tables divided into chapters. Each chapter contains a textual summary of each table and highlights some of their implications. The tables are divided into four groups:

A. Household characteristics – 3 tables
B. Economic profile – 5 tables
C. Tenure, tenure security, dwelling characteristics – 4 tables
D. Infrastructure services – 7 tables

Notes to the tables are identified by small letters appearing as superscripts at the end of each table. All tables present weighted figures at the household level, unless otherwise noted, to reflect the total population of the respective table cell. The N values, however, present the unweighted number of households, unless otherwise noted.

The final chapter of this abstract contains a series of three "Development Polygons". These complement the detailed tables presented in sections A through D by illustrating an "overall" sense of the state of the city. The figures included are the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond[9].

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9   The basic format for all three figures appear in the World Bank Policy Research Working Paper, "Poverty, Living Conditions, and Infrastructure Access" A Comparison of Slums in Dakar, Johannesburg, and Nairobi" by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

While the tables generally have a common set of column headings, there is some variation. The following are definitions for those headings that require clarification:

- *Informal/Formal Areas* – This distinguishes between areas based on whether most households in the area have property title and official services. It is a designation provided by a status code at the level of the EA (Enumeration area) as used by the National Census.

- *Gender (Informal)* – For the households living in the locations coded as "Informal," data for household characteristics are provided for both male- and female-headed households. As is standard, the male-headed households may contain the spouse while female-headed households do not.

- *Class (of durable)* – Durable assets are a standard measure of household wealth. They are grouped into three classes, roughly based on their likely market value and degree of permanence. The actual items in each class are indicated in the table. The values reported for these categories are the number owned by the household, not their average or total value.

- *Spending Power* – The total value of household expenditures collected by the survey, excluding rent or mortgage payments.

- *Access to Infrastructure* – This indicator combines six categories of infrastructure (divided into 13 subcategories) weighted by importance to the household and summed to create a household indicator from 0 to 9.5. See NORC (August 2013), "Kenya Municipal Program State of the Cities: Overview Report" for a more detailed description.

- *Household Poverty* – The poverty line varies depending on the number of members of the household and their age. It is calculated by adding together:
  - 5,567 KSh per month for each adult 15 years and older in household,
  - 3,619 KSh per month for each child aged 5 to 14 in household,
  - 1,336 KSh per month for each child under 5 years old in household.

HOUSEHOLD CHARACTERISTICS

This section presents basic household characteristics. Table A.1 provides information on household size and household member distribution by age category. Table A.2 details the level of education of the members of household, as well as the proportion of children and adults of different ages who were currently in school at the time of the survey. Finally, Table A.3 presents household health characteristics, including the proportion of children under 15 who have received the BCG vaccine (an immunization against tuberculosis), a major public health concern given that Kenya is a high-tuberculosis-burden country.[10] Table A.3 also includes the number of household members with an illness or injury in the two weeks prior to the survey, the proportion of those members who visited a health practitioner, average household medical expenditures for the month preceding the survey, and the percentage of households that have health insurance. All of these figures are given comprehensively and broken down by location type, the household's poverty status, and the gender of head of household (among informal areas).

A.1 Household Demographic Composition

The 2009 census estimated that the municipality of Kisumu had a population of 388,311, a 20% increase over the figure reported in the 1999 census; this represents of a 1.87% annualized average growth rate.[11] The average household size in Kisumu is 4.1 members, and the only statistically significant difference was by poverty status- households under the poverty line are larger, averaging 4.3 members, while households above the poverty line average only 3.8 members. On average, 61.5% of households' members are aged 15 to 60 years old, 18.2% are between 5 and 14 years old, 11.1% are under 5 and 2.6% are over 60. Kisumu households above the poverty line had a significantly higher percentage of 15-60 years olds (a category which includes prime working age members) than those below the poverty line; wealthier households also had a lower percentage of children 5-14 years old and adults over 60 than poorer households. Households in informal settlements had a significantly larger percentage of adults over 60 than those in informal settlements. The head of household is male in 77% of all households, a figure that varied significantly only by area; 81% of households in informal areas were male while only 71% were male-headed in formal areas. Among female-headed households, about half are above the poverty line while half are below the poverty line.

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10 World Health Organization Global tuberculosis report 2012, retrieved June 12th 2013 from http://www.who.int/tb/publications/global_report/en/
11 From Statistical Abstract 2010 and Statistical Abstract 2006, Kenya National Bureau of Statistics.

Table A.1: Household demographic characteristics

Characteristic	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of households							
Weighted	87,958	52,517	35,441	41,870	42,756	41,660	9,733
N (unweighted)	740	370	370	346	362	295	69
Size of household	4.08	3.97	4.23	**4.34**	**3.79**	3.99	3.78
N	740	370	370	346	362	295	69
Mean percent of household members aged:							
Total	100	100	100	100	100	100	100
Under 5	11.1	11.3	10.8	11.7	10.5	**12.6**	**6.3**
5 to 14	18.2	17.9	18.8	**21.1**	**15.4**	16.5	23.0
15 to 60	61.5	62.4	60.1	**57.8**	**65.0**	63.7	56.6
Over 60	2.6	**1.6**	**4.2**	**3.7**	**1.7**	1.4	2.5
N	740	370	370	346	362	295	69
Proportion of households…							
Male-headed	77	81	71	76	79		
Female-headed	23	19	29	24	21		
N	724	364	360	337	356		
Female-headed distribution		50	50	52	48		
N		173	163				

A.2 Household Education Characteristics

Kisumu was part of the Nyanza Province, where in 2009 primary classrooms had an average class size of 33 students and secondary classrooms had on average 30 students. Student-teacher ratios in the former Nyanza Province were, on average, 47.4 for primary schools and 23.4 for secondary schools.[12]

The first panel of Table A.2 presents statistics on the education of all individuals aged 5 years and older within the surveyed households. Only half of all individuals have completed secondary school or higher—a figure that is likely skewed by the fact that the majority of household members are 15 to 60 years old—but 77% completed primary or higher. A significantly higher percentage of individuals in formal areas had higher education (17%) as compared to those in informal areas (9%). Having "no education" is rare at 2% overall, although it was slightly higher (and significant) in poorer households, female–headed households, and, perhaps surprisingly, in formal areas. In informal areas, members of female-headed households are more likely to have ended their education after completing some primary school while members of male-headed households are more likely to have completed secondary school.

The second panel of the table shows the mean percent of adult individuals over 18 years within each household. This is done to show intra-household educational levels among households' adult members. We find that on average, 43.5% of a household's adults have completed secondary school or higher (26.5% completed secondary, while 17.0% completed higher education) and 52% have some form of education.

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12 Provinces no longer exist in Kenya. This data is based on the Kenyan Institute for Public Policy Research and Analysis 2009 Economic Report, Table A3.16, pg. 192, per Ministry of Education statistics, http://www.marsgroupkenya.org/pdfs/2009/10/Kenya_Economic_Report_2009.pdf Section

Table A.2: Household education characteristics

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of individuals 5 and older with highest grade completed:							
Total	100	100	100	100	100	100	100
None	2	**1**	**4**	**3**	**1**	**1**	**3**
Some primary	36	35	36	39	32	35	43
Completed primary	17	17	16	18	16	20	7
Some secondary	13	**15**	**11**	13	13	16	12
Completed secondary	20	**22**	**17**	19	20	20	21
Higher	13	**9**	**17**	8	18	9	13
N	2,397	1,130	1,267	1210	1074	910	202
Mean percent of household's adults over 18 with highest grade completed:							
Total	100	100	100	100	100	100	100
None	3.2	**1.1**	**6.2**	**4.9**	**1.3**	0.4	4.3
Some primary	14.9	13.6	16.9	**17.7**	**11.7**	12.9	18.5
Completed primary	23.4	25.4	20.5	26.2	21.6	**28.7**	**14.0**
Some secondary	13.8	15.4	11.3	15.5	11.8	**17.0**	**10.6**
Completed secondary	26.5	**30.0**	**21.2**	25.3	27.8	28.7	32.8
Higher	17.0	**13.1**	**22.8**	**9.8**	**24.3**	12.0	18.7
N	737	368	369	346	359	294	68
Percent of individuals in school by age group:							
5 to 14	90.6	89.6	92.0	92.5	88.1	92.5	94.5
N	391	190	201	206	166	148	37
15 to 18	72.3	74.4	69.9	65.9	83.8	78.8	64.7
N	172	74	98	96	65	59	14
Over 18	14.4	12.0	18.0	13.7	15.7	11.4	15.9
N	732	366	366	344	356	292	68

On average, only 3.2% of households' adults had no education whatsoever. Formal areas had a significantly larger percent with no education (6.2%) compared to informal areas (1.1%) but formal areas also had a significantly larger percentage with some higher education (22.8%) as compared to informal areas (13.1%). Poor households fared significantly worse than non-poor on both education measures; poor households had an average of 4.9% with no education vs. 1.3% in non-poor households, and only 9.8% of poor households had any higher education as compared to 24.3% of non-poor households.

The third section of the table shows enrollment figures: 90.6% of individuals aged 5 to 14 years old are currently in school; 72.3% of individuals 15 to 18 are enrolled, and 14.4% of individuals over 18 are enrolled in school (a figure which includes adults no longer planning on attending school). Any differences in enrollment by location, poverty status, or gender of head of household were not statistically significant or were not able to be tested for significance due to a lack of data at the census tract level.

A.3 Household Health Profile

Kisumu was part of Nyanza Province, which in 2005 had an average of 7.7 doctors and clinical officers per 100,000 residents and 38.4 nurses per 100,000 residents.[13] The former Nyanza province had an average of 17.7 medical facilities per 100,000 residents, including hospitals, clinics, dispensaries, and other types of facilities.[14]

Overall, 87% of households report their children under 15 have received BCG (tuberculosis) immunizations. Thirty-eight percent of households had a sick or injured household member in the two weeks prior to the interview and 75% of these visited a health practitioner. Household medical expenses averaged 2,335 KSh in the month prior to the survey, and rates of health insurance coverage are quite low overall (23%). Health characteristics either did not vary significantly by area type, poverty status, or gender of household head, or there was not enough data at the census tract level to test for significance.

Table A.3: Household health characteristics

Characteristic	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of household's children under 15 having received BCG immunization	87	85	89	88	86	85	85
N	500	248	252	253	224	201	42
Percent of households with an injured/ ill member, previous two weeks	38	40	35	37	39	40	37
N	740	370	370	346	362	295	69
Percent of ill household members that visit a health practitioner, previous two weeks	75	78	70	74	74	78	72
N	276	142	134	130	138	114	26
Household medical expenditures (KSh), previous month	2,335	1,421	3,739	1,086	3,694	1,367	1,403
N	691	350	341	326	340	280	65
Percent of households with health insurance	23	20	27	20	25	20	21
N	736	367	369	344	361	292	69

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[13] 2004/2005 numbers of healthcare providers obtained from Partners for Health Reformplus 2006 Report, Table A1, pg. 39, Annex A, statistics obtained from Rep. of Kenya. www.healthsystems2020.org/files/1654_file_Tech101_fin.pdf. Per capita figures calculated by dividing by 2005 (estimated) population obtained from the Kenya Integrated Household Budget Survey, Table 3.1, http://www.knbs.or.ke/pdf/Basic%20Report%20(Revised%20 Edition).pdf.

[14] Based on most current (undated) figures from Kenya Bureau of Statistics Open Kenya online database, https://kenya.socrata.com/Health-Sector/ Health-Facility-Pie-Chart/yre4-763w. Per capita figures calculated by dividing by 2009 census population, obtained from 2010 Statistical Abstract, Kenya National Bureau of Statistics.

HOUSEHOLD ECONOMIC PROFILE

B.1 Household Occupational Composition

Table B.1 presents the current occupation, or main activity, of household members. The first panel shows the percent of all adults over 18 in each of the occupations. The five most prominent occupation categories are casual employee, regular employee, self-employed, homemaker, and student, which together comprise about 82% of all adults in Kisumu over 18 years old. Individuals in informal areas are more likely to be self-employed but only half as likely to be homemakers as compared to those in informal areas. Individuals in poor households were almost twice as likely to be unemployed and not actively looking for work. Female headed households were twice as likely to have casual employees and student members. All of the aforementioned differences are significant.

The second panel shows the average percent of adults over 18 within each household that are occupied in each of the categories. This is done to show intra-household occupational status among households' adult members. The results here are similar to those in the first panel above. Here, we find that on average, about two-thirds (65%) of a household's adult members are either regular employees, casual employees, or self-employed. About 14.5% are homemakers, 8.7% are unemployed but looking for work, 8.9% are students, and 5.5% are unemployed but not presently looking for work. Significant differences are similar to the first table with the following additions: female headed households' adults in this panel are significantly more likely to be self-employed than those in male-headed households (32.2% vs. 21.6%) and significantly less likely to be homemakers (6.3% vs. 10.3%). Unlike the first table, there is no significant difference between poor and non-poor households in terms of the percent of adults unemployed and not looking for work.

Table B.1: Household members' main activity

Occupation[a]	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of adults over 18 with occupation:							
Employer	0.1	0.0	0.3	0.0	0.3	0.0	0.0
Regular employee	17.3	17.7	16.9	15.0	19.7	18.3	17.2
Casual employee	18.6	19.4	17.4	18.7	18.5	**21.5**	**11.5**
Self-employed	19.7	**22.1**	**16.5**	18.5	21.5	21.7	27.2
Unpaid family worker	0.2	0.1	0.2	0.3	0.0	**0.0**	**0.7**
Apprentice	0.1	0.2	0.0	0.0	0.3	0.3	0.0
Student	12.2	11.2	13.6	12.4	11.4	**9.2**	**20.5**
Pensioner/investor	0.8	**0.3**	**1.6**	0.9	0.9	0.3	0.0
Earning from investments/ property	0.3	0.2	0.5	0.3	0.3	0.2	0.0
Sick/unable to work	0.4	0.2	0.6	0.6	0.2	0.3	0.0
Unemployed looking for work	9.1	10.2	7.5	9.8	8.7	10.0	11.7

Occupation[a]	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Unemployed, not looking for work now	6.0	7.0	4.7	**7.6**	**4.0**	6.7	5.7
Homemaker	14.5	**10.9**	**19.4**	15.6	13.3	10.9	5.5
N	1,557	749	808	759	731	607	128
Mean percent of household's adults over 18 with occupation: [b]							
Employer	0.1	0.0	0.2	0.0	0.2	<u>0.0</u>	<u>0.0</u>
Regular employee	16.9	17.4	16.0	14.3	19.4	18.4	15.3
Casual employee	22.0	22.2	21.6	21.4	22.8	**24.2**	**15.1**
Self-employed	21.2	23.1	18.4	20.2	22.6	**21.6**	**32.2**
Unpaid family worker	0.2	0.1	0.3	0.3	0.3	**0.0**	**0.4**
Apprentice	0.1	0.2	0.0	0.0	0.2	0.0	0.0
Student	8.9	8.6	9.3	8.7	8.4	7.6	12.4
Pensioner/investor	0.7	0.2	1.4	0.9	0.5	0.3	0.0
Earning from investments/ property	0.2	0.2	0.3	0.2	0.3	0.2	0.0
Sick/unable to work	0.6	0.5	0.7	1.0	0.1	0.6	0.0
Unemployed looking for work	8.7	10.3	6.3	9.5	8.4	10.0	12.1
Unemployed, not looking for work now	5.5	6.5	4.0	6.8	3.7	**6.2**	**6.1**
Homemaker	14.5	**10.5**	**20.5**	16.3	12.6	**10.3**	**6.3**
N	737	368	369	346	359	294	68

Notes:
a. The category "Other" has been omitted.
b. These numbers are obtained by first computing the percentages of each household's members in each category, and then taking the mean of these percentages over all households.

B.2 Household Income/Expenditure Levels

There are two general approaches to measure spending power: expenditure and income, both of which are shown in the tables below. In the survey, income derives from household members' salaries, business earnings, rents, public cash support, and earnings from financial assets in the month prior to the interview, but does not include any remittances. Expenditures include all purchases, including investments for household-owned businesses. In theory, both approaches express the same amount of spending power, but typically one approach is not enough, especially when estimations are based on survey data. This is because survey respondents' perceptions about their income and expenditures can be unreliable; estimates vary depending on seasonal changes in economic activities, type of assets owned, household's cash flows, and in-kind payments.

In practice, the expenditure approach is usually more accurate because most respondents, making purchases daily, recall their expenses better. Income, on the one hand, can be problematic because it can be subject to respondent misreporting (e.g., desire to impress the enumerator) and, with non-wage income; respondents do not generally make a clear distinction between revenue (sales) and income (revenue minus expenses). Using both methods, therefore, provides an additional level of verification.

About half (49%) of Kisumu households have monthly expenditures below the poverty line, as determined by the household composition. This proportion is fairly equal between formal and informal areas, and surprisingly, it is not significantly different if the head of household works in a "skilled" or in an "unskilled" profession. Not surprisingly, poverty as measured by expenditures is significantly lower for households with a water connection or that own a business.

Looking at the expenditure distribution, 60% of Kisumu households have monthly expenditures between 9,001 and 30,000 KSh. As indicated by the italics, the entire household expenditure distribution varies by whether the household has water connection and by head of household work skill status. As one may expect, households tend to spend significantly more when the head is a skilled worker; 31% of unskilled worker headed households are at the lower end of the expenditure spectrum (spend 9,000 KSh or less per month) while only 15% with skilled heads belong to this lower end. Perhaps contrary to expectations, there are almost no significant differences in expenditures when comparing male- and female-headed households.

Income reveals more households at the lower end of the wealth spectrum than expenditures; 42% of households report they earn less than 9,001 KSh per month, while only 24% reported they spent less than this per month. For income, there was not enough data at the census tract level to test for significant differences except by gender. Unlike expenditures, which did not vary significantly by gender, the income distribution does vary significantly by gender; households tend to earn less when the head is a female; in fact, a full 17% of female-headed households are in the lowest income category (3,000 KSh or less per month) while only 4% of male-headed households fall into the lowest income category.

On average, households who sent money to individuals outside their household sent around 6,541 KSh in the three months prior to the interview, and those that received money received almost 9,467 KSh during the same period. Households were more likely to send money than to receive it, and wealthier households were much more likely to send money—in the "Transfers" column, we see that 70% of households in the top expenditure category sent money to friends or relatives, compared to only 5% of those in the bottom category. However, the proportion of households receiving remittances (transferred income) was fairly equal across income categories (22%-27%), except for the top income category, in which 46% of households are remittance recipients.

Transfers and remittances differ significantly by all household characteristics. Transfers were significantly higher in formal vs. informal areas, in skilled vs. non-skilled headed households, and for male-headed vs. female-headed households. Average remittances (receipts) on the other hand, were significantly higher for informal areas than formal areas. Average remittances were drastically higher in female-headed households (approximately 22,000 KSh) than in male-headed households (approximately 8,000 KSh), and receipts of income were also much higher in skilled-head households (approximately 14,000 KSh) than in unskilled (approximately 7,000 KSh); both differences were statistically significant. Remittances and transfers were both significantly and numerically much higher for households with water connections than without; households with a water connection transferred about 15,000 KSh vs. about 5,000 KSh for those without a connection (the figure for those without a connection is not shown). Remittances (receipts) averaged 31,700 for those with a water connection vs. about 7,000 KSh for those without (the figure for those without a connection is not shown).

Table B.2a: Monthly household spending power, as measured by expenditure

Characteristic	All	Location		Household has...			House hold head is[c]		Gender (Informal)		Value of transfer (row pct.)[d]
		Informal areas	Formal areas	Tenure[a]	Water connection	A business[b]	Skilled	Un-skilled	Male-headed	Fe-male-headed	
Percent of HHs below poverty line	49	52	46	53	**31**	**38**	45	52	51	54	
N	708	357	351	197	75	110	275	433	285	67	
Mean expenditure (monthly KSh)	21,397	**18,726**	**25,354**	23,530	**46,171**	22,204	29,504	16,250	18,067	19,424	
N	740	370	370	205	78	118	189	451	295	69	
Percent of households with expenditure:[d]											
Less than 3,000 KSh	2	2	3	4	1	1	*1*	*4*	2	2	300 (5%)
3,001-6,000 KSh	9	8	11	12	*1*	7	*5*	*12*	8	10	1,953 (32%)
6,001-9,000 KSh	13	13	13	13	*3*	8	*9*	*15*	13	13	3,842 (42%)
9,001-30,000 KSh	19	19	18	21	*2*	18	*15*	*21*	20	14	4,081 (40%)
13,001-18,000 KSh	18	**20**	**14**	13	15	18	17	18	20	18	3,873 (50%)
18,001-30,000 KSh	23	25	20	18	14	28	26	21	23	31	5,212 (53%)
31,001-75,000 KSh	13	11	17	15	*48*	15	*21*	*9*	12	9	8,366 (73%)
Above 75,000 KSh	3	2	5	4	*15*	4	*6*	*1*	1	2	16,741 (70%)
N	740	370	370	205	78	118	289	451	295	69	354
Cash transfers[e]	6,541	6,115	7,392	4,948	14,591	8,839	7,475	5,702	5,935	5,755	
N	197	94	103	64	22	29	72	125	66	24	

Notes:
a. Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
b. "Business" refers to a self-employed activity that may or may not entail household or wage employees.
c. Includes those self-declared as "skilled" as well as "professional".
d. An imputed 30-day value from responses over several periods (7 days for food, 30 days for other consumables, 12 months for durables and annual services). See Volume I in the Overview Report. No significance test performed on this column.
e. Transfers are cash outflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

Table B.2b: Monthly household spending power, as measured by income

Characteristic	All	Location		Household has…			House hold head is[c]		Gender (Infor-mal)		Value of remittance (row pct.)[e]
		Informal areas	Formal areas	Tenure[a]	Water connec-tion	A busi-ness[b]	Skilled	Un-skilled	Male-head-ed	Female-headed	
Proportion of households with income:[d]											
Less than 3,000 KSh	9	6	12	18	0	10	2	13	**4**	**17**	1,695 (22%)
3,001-6,000 KSh	16	17	14	14	0	8	10	20	18	12	6,629 (20%)
6,001-9,000 KSh	17	20	12	15	2	15	14	19	20	18	4,373 (29%)
9,001-30,000 KSh	13	13	12	14	9	12	13	12	14	10	4,530 (30%)
13,001-18,000 KSh	15	18	12	11	9	18	16	15	18	17	7,523 (38%)
18,001-30,000 KSh	16	15	17	14	22	17	19	14	15	12	6,243 (23%)
31,001-75,000 KSh	13	10	17	12	41	16	21	7	10	8	29,415 (27%)
Above 75,000 KSh	3	1	4	2	17	4	6	1	1	4	21,396 (46%)
N	597	307	290	154	64	85	239	358	246	55	166
Cash remittancese	9,467	10,967	7,261	4,643	31,684	9,009	13,830	6,999	7,909	21,805	
N	197	94	103	64	22	29	72	125	66	24	

Notes:
  a. Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
  b. "Business" refers to a self-employed activity that may or may not entail household or wage employees.
  c. Includes those self-declared as "skilled" as well as "professional".
  d. Total household cash income in KSh, previous month, not including in-kind income or cash assistance from/to family or friends who live outside the household. No significance test performed on this column.
  e. Remittances are cash inflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

B.3 Household Wealth Composition

The "household wealth index" is calculated from the household's declared ownership of a list of common household items. The value itself is created by totaling the estimated value of each item (indicated in brackets, in USD), converting to KSh, and dividing by 1,000; so the average of 35.8 means that the average household owned approximately 35,800 KSh worth of listed possessions. However, since each possible possession was only counted once, this should not be taken as a reliable estimate, but rather a unitless index of comparison.

This index of household wealth is significantly higher in formal vs. informal areas and non-poor vs. poor households, but not for male-headed vs. female headed households. There are significant differences by area type in the holdings of Class-1 and 3 durables, as well as in farm animal holdings. The significant differences between poor and non-poor households are found in Class-2 and Class-3 durables, entertainment equipment, and motorized transport.

Home and land values questions had a high number of missing or "don't know" responses, which means that the averages shown are drawn from a relatively small group and tests of statistical significance were not possible. Imputed land values were much higher than the value of residences (home and land averaged 1,849,000 KSh while homes alone averaged only 195,300 KSh).

Table B.3: Household wealth composition

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Index of household wealth[a]	35.8	30.2	44.2	30.2	41	30	27.7
N	740	370	370	346	362	295	69
Household's average holdings of:							
Class-1 durables (furniture, pans, iron, mosquito net) [7]	6	**5.8**	**6.2**	5.9	6	5.7	6
Class-2 durables (stove, sewing machine, fan, wheelbarrow, water storage tank) [60]	1.3	1.3	1.4	**1.2**	**1.5**	1.2	1.3
Class-3 durables (refrigerator, washing machine, electric generator, bicycle) [100]	0.4	**0.3**	**0.5**	**0.3**	**0.5**	0.3	0.3
Farm animals (poultry and livestock) [200]	0.4	**0.2**	**0.6**	0.4	0.4	0.2	0.3
Entertainment equipment (radio, TV, satellite dish, DVD, video player) [80]	1.7	1.7	1.7	**1.4**	**1.9**	1.7	1.5
Motorized transport (motorcycle [400], car [1,000])	0.1	0.1	0.1	**0**	**0.1**	0.1	0
N	740	370	370	346	362	295	69
Value of primary residence, not its land (in 1,000 KSh)[b]	195	<u>261</u>	<u>89</u>	<u>66</u>	<u>316</u>	<u>329</u>	<u>153</u>
N	18	6	12	7	11	4	2
Value of primary residence and its land (in 1,000 KSh)[b]	1,849	<u>1,757</u>	<u>1,949</u>	<u>1,757</u>	<u>1,949</u>	<u>1,846</u>	<u>8,924</u>
N	81	13	68	44	37	10	3
Value of other land and/or residence (in 1,000 KSh)[c]	468	<u>597</u>	<u>411</u>	<u>181</u>	<u>698</u>	<u>747</u>	<u>356</u>
N	39	9	30	19	20	6	3

Notes:
a. This is a class-weighted average of the number of items as disaggregated in this same table, multiplied by the weight given within the square brackets [].
b. About 87% of the sample had missing values for this amount, though at about the same frequency across the categories of this table. About half the sample that declared owning land or a residence failed to report its value. Averages are only over households with the asset. See "Proportion of Owners" in Table C.1. Note that values in the last three rows of the table are divided by one thousand.
c. Since the survey does not ask the value of these, they have been imputed as a percent of primary residence value where it was declared (see Footnote (b)). These imputations are: land in city (10%), land outside city (5%), residence only in city (40%), and residence only outside of city (28%). If household has both land and structure these are scored separately and added together. In the case where the land of primary residence is not owned the value of the residence is first doubled before the imputations are made.

B.4 Household Finance

Approximately 57% of all households in Kisumu have a bank account, a number that differs significantly only by poverty status, where nearly 70% of the non-poor have a bank account while only 46% of the poor have a bank account. The percentage of households with loans is extremely low at 16% (including all sources of loans); bank loans are significantly higher for households in formal vs. informal areas and among non-poor vs. poor households. Consistent with findings mentioned above, far more households (59%) sent money to people not living at the household than received money (36%). Household are significantly more likely to send money if they reside in informal areas vs. formal, and if they are non-poor vs. poor. Female-headed households are also significantly more likely than male-headed households to receive cash.

Table B.4: Household finance

Characteristic	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with a bank account	57	56	58	**46**	**66**	56	53
N	739	369	370	346	362	294	69
Percent of households with a loan	16	14	19	**12**	**20**	14	14
N	738	369	369	346	362	295	68
Percent of households with a loan from a…							
Bank	7	**5**	**10**	**3**	**10**	56	53
Microfinance institution	5	5	3	4	5	6	5
Savings/credit group or co-op	4	3	5	3	4	3	4
Relative/friend	0	0	0	0	0	0	1
Informal lender	0	0	0	0	0	0	0
N	740	370	370	346	362	295	69
Percent of HHs receiving cash from those not now living at residence[a]	36	35	38	39	34	**31**	**48**
N	737	368	369	345	361	293	69
Percent of HHs sending cash to those not now living at residence[a]	59	**65**	**51**	**55**	**63**	66	57
N	739	370	369	346	361	295	69

Over the previous twelve months.

B.5 Household-Owned Business Profile

Eighteen percent of households own a business, most of which (69%) engage in some form of selling. These businesses tend to be fairly new and quite small, as the average age for a business is less than two years and the average number of employees is between one and two—in fact, the business owner is the sole employee in many cases. Most businesses are not registered at all (65%) although 32% are registered with a local authority; 45% of businesses do not pay fees and no business reported paying Value Added Tax. The relatively low number of observations at the census tract level means that it is not possible to perform tests of statistical significance for most of Table B.5.

Table B.5: Household-owned business profile

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of HH with business ownership, last 12 months	18	**21**	**13**	**13**	**21**	19	29
N	740	370	370	346	362	295	69
Type of business:[a]							
Manufacturing	9	7	13	9	10	10	0
Selling	69	79	43	70	65	74	91
Transport	11	8	20	11	12	11	0
Professional (including Internet)	1	0	5	0	2	0	0
Other (barber, cleaning, etc.)	10	6	20	10	11	5	9
N	118	75	43	40	70	53	20
Years in operation	2	2.2	1.6	1.7	2.4	2.1	2.6
N	118	75	43	40	70	53	20
Number of employees	1.5	1.4	1.7	1.5	1.5	1.3	1.7
N	118	75	43	40	70	53	20
Which are…							
Household members	1.2	1.3	1.2	1.4	1.1	1.2	1.5
N	118	75	43	40	70	53	20
Non-household members	0.2	0.1	0.5	0.1	0.3	0.1	0.2
N	118	75	43	40	70	53	20
Revenue in previous month[b]	10,883	8,024	18,444	8,563	12,727	7,678	7,939
N	73	46	27	25	45	30	15
Registration status:							
Local authority (municipal or city council)	32	27	44	30	33	30	20
Kenya Revenue Authority	3	1	8	2	2	0	3
Registrar of Companies	2	2	3	0	4	2	0
None of the above	65	71	49	70	61	67	80
N	118	75	43	40	70	53	20
Share of businesses making fiscal contributions:							
Daily market local fee	45	45	46	48	43	40	52
Single business permit local fee	14	11	21	17	13	16	0
Value Added Tax	0	0	0	0	0	0	0
N	118	75	43	40	70	53	20

Notes:
   a.   Households were allowed to choose more than one category so these figures may exceed 100%.
   b.   Average over only those businesses operating over the period.

DWELLING TENURE, SECURITY, AND CHARACTERISTICS

C.1 Household Dwelling Characteristics

On average, households in Kisumu have 2.4 members per room, a ratio that is significantly higher in informal vs. formal areas, poor vs. non-poor households, and male-headed vs. female headed households. Households have less than one bathroom on average. Forty-eight percent of households have a kitchen, a figure that does not vary greatly numerically or statistically by category.

Over 60% of households in Kisumu use charcoal as their primary cooking fuel, but primary cooking fuels differ significantly by area. In informal areas 70% use charcoal and 20% use paraffin/kerosene as their primary cooking fuel; in formal areas a wider variety of fuels are used as primary cooking fuels, including the prevalent charcoal (47%) but also firewood (29%) and gas (14%).

Most households are renters (73%), with only a small percentage (22%) owning their land and structure. In formal areas, households are much more likely to own and less likely to rent than households in informal areas; in informal areas, 85% are renters while only about half are renters in formal areas. Ownership also varied significantly by gender; perhaps surprisingly, female-headed households are twice as likely to own as male-headed households.

Fully 53% of households report that the area around their dwelling floods during heavy rains, a figure that is significantly higher in informal areas. Twenty-five percent of households in informal areas say they live within a ten-minute walk of a formal or informal garbage dump, significantly higher than the 8% who report as such in formal areas. However, only 3% in informal areas state that they are exposed to factory pollution in their neighborhood vs. 11% in informal areas (also statistically significant). None of the hazards differed significantly by poverty status or gender.

Quality of housing varies widely across location. Perhaps surprisingly, twice as many households in formal areas have an earth or clay floor (36%) as compared to informal areas, but by poverty status 33% of the poor report having an earth floor, while only 18% of the non-poor have earth floors. Almost all households have an iron or grass roof, and the proportion is similar across formal vs. informal areas and in poor vs. non-poor households. Only 39% of households have stone or brick walls, although it is significantly more common in formal areas than informal areas, and among non-poor vs. poor households.

Table C.1: Household dwelling characteristics

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of persons per room	2.4	**2.6**	**2.0**	**2.7**	**2.1**	**2.7**	**2.2**
N	740	370	370	346	362	295	69
Number of bathrooms	0.5	0.4	0.5	0.3	0.6	0.4	0.6
N	740	370	370	346	362	295	69
Proportion of residences with kitchen	48	46	52	45	51	46	47
N	740	370	370	346	362	295	69
Primary cooking fuel:							
Electricity	0	0	1	0	1	0	0
Paraffin or kerosene	15	**20**	**9**	14	18	22	15
Gas	9	**7**	**14**	**3**	**15**	**5**	**13**
Charcoal	61	**70**	**47**	**66**	**55**	70	67
Firewood	13	**2**	**29**	**16**	**10**	1	6
N	730	365	365	343	355	290	69
Proportion of households that:							
Total	100	100	100	100	100	100	100
Owns the land only	0	**0**	**1**	1	0	<u>0</u>	<u>0</u>
Owns structure only	5	4	5	5	4	3	8
Owns land and structure	22	**11**	**38**	23	21	8	19
Rents	73	**85**	**54**	71	74	**88**	**73**
Squats	0	**0**	**1**	0	0	<u>0</u>	<u>0</u>
N	740	370	370	346	362	295	69
Pct. of HHs in areas subject to[a]:							
Flooding[b]	53	**58**	**45**	55	53	61	48
Mudslides[c]	9	6	13	11	8	7	5
10 minute walk to formal or informal garbage dump	18	**25**	**8**	20	16	27	16
Factory pollution (air, water, noise)	6	**3**	**11**	6	7	3	2
N	740	370	370	346	362	295	69
Housing quality:							
Pct. with earth/clay floor	25	**18**	**36**	**33**	**18**	19	17
Percent with corrugated iron roof	96	**100**	**91**	98	94	100	100
Percent with grass roof	1	**0**	**1**	1	0	<u>0</u>	<u>0</u>
Percent with stone/brick/block walls	39	**34**	**45**	**30**	**47**	33	37
N	740	370	370	346	362	295	69

Notes:
a. All data is self-reported, and therefore subjective.
b. Households reported that the area floods during heavy rains.
c. Households reported that they are located on a hillside that is subject to mudslides.

C.2 Home and Land Ownership

Most Kisumu households are renters (73%), with only a small percentage (22%) owning their land and structure. About 97% of households in Kisumu feel they have secure tenure; this is likely influenced by the fact that only 2% of households have been evicted in the last 12 months. The majority of landowners have a freehold title for their land (72%); the next-most common category is to have no documentation (21%).

Table C.2: Household residence and land tenure

Characteristic	All	Location		HH poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households that:							
Total	100	100	100	100	100	100	100
Own the land only	0	**0**	**1**	**1**	**0**	<u>0</u>	<u>0</u>
Own structure only	5	4	5	5	4	3	8
Own land and structure	22	**11**	**38**	23	21	8	19
Rent	73	**85**	**54**	71	74	88	73
Squat	0	**0**	**1**	0	0	0	0
N	740	370	370	346	362	295	69
Percent of HHs that feel secure in ownership	97	<u>98</u>	<u>97</u>	<u>99</u>	<u>96</u>	<u>97</u>	<u>100</u>
N	205	38	167	106	91	25	12
Variability of households feeling secure[a]	0.04	0.00	0.17	0.03	-	0.00	-
N	205	38	167	106	91	25	12
Percent of HHs that experienced eviction	2	2	0	1	2	3	2
N	740	370	370	346	362	295	69
Proportion of HH owners by type of land-possession document:							
Total	100	100	100	100	100	100	100
None	21	<u>29</u>	<u>17</u>	<u>26</u>	<u>12</u>	<u>40</u>	<u>0</u>
Freehold title	72	<u>68</u>	<u>74</u>	<u>68</u>	<u>80</u>	<u>58</u>	<u>93</u>
Temporary occupation license	3	<u>3</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>2</u>	<u>7</u>
Share certificate	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Government certificate of title[b]	0	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Letter from chief (provincial administration)	4	<u>0</u>	<u>6</u>	<u>3</u>	<u>5</u>	<u>0</u>	<u>0</u>
Other	0	0	0	0	0	0	0
N	238	52	186	123	103	38	13
Neighborhood mobility							
Years in dwelling	7.0	**5.9**	**8.6**	7.1	7.0	8.5	5.0
N	737	368	369	344	361	375	293
Years in neighborhood	8.6	**7.1**	**10.8**	8.7	8.5	10.7	6.2
N	735	367	368	343	361	293	68
Home loan payment as a percent of spending power[c]	10	<u>10</u>	<u>10</u>	<u>7</u>	<u>12</u>	<u>10</u>	-
N	12	4	8	2	8	4	0

Notes:
a. Computed as the intra-class correlation coefficient, where the "class" is the EA. This measures the extent to which households within an EA resemble each other in their feelings of security in ownership. No significance tests performed on this row.
b. Long-term lease from City council/Government.
c. Computed only for those with a housing loan.

On average, households have lived in their current dwelling for 7 years and in their current neighborhood for 8.6 years. These figures vary significantly by area: households in formal areas have been in their dwelling and neighborhood for longer than those in informal areas. Neither differs significantly by poverty status. Finally, the number of years in the neighborhood is significantly higher for male-headed households than for female-headed households.

Among households using a loan to pay for their home, the average loan payment is 10% of the household spending power. For loan payments, there were not enough observations at the census tract level to test for differences among different categories of households.

C.3 Distribution of Housing Values and Rents

The average value of homes in Kisumu is about 1.48 million KSh, but 42% of all home values are between 9,000-299,999 KSh. Among rent-paying tenants, the average rent is 3,070 KSh per month, with households fairly evenly distributed along the rent level spectrum. In this table there were not enough observations at the census tract level to test for differences among different categories of households for most statistics.

Table C.3: Distribution of housing values and rents

| Characteristic | All | Location | | Household has... | | | HH head is...(c) | | Gender (Informal) | |
		Informal areas	Formal areas	Tenure	Water connection	A business	Skilled	Un-skilled	Male-headed	Female-headed
Average home value (1,000 KSh)[a]	1,482	2,313	1100	1,849	2,867	593	2420	1,205	1,243	4484
N	99	19	80	81	6	8	23	76	14	5
Distribution of home values: Total	100	100	100	100	100	100	100	100	100	100
1-8,999 KSh	4	12	1	0	0	0	3	5	0	35
9,000-299,999 KSh	42	19	52	38	0	30	19	48	29	0
300,000-999,999 KSh	19	24	16	16	10	55	13	20	22	29
1,000,000-2,499,999 KSh	23	30	19	29	40	14	31	20	37	15
2,500,000-250,000,000 KSh	13	15	12	16	50	0	34	6	13	21
N	99	19	80	81	6	8	23	76	14	5
Average monthly rent (tenants)[b]	3,070	2,176	5,169	_	10,006	2,914	3,895	2,420	**2,016**	**2,994**
N	472	311	161		58	86	216	256	254	52
Distribution of monthly rents: Total		100	100		100	100	100	100	100	100
1-899 KSh	16	16	17		1	9	8	23	17	15
900-1,499 KSh	19	23	11		1	17	16	22	24	16
1,500-1,999 KSh	15	19	8		1	19	12	18	18	22
2,000-3,499 KSh	23	25	19		6	36	27	21	26	22
3,500-150,000 KSh	26	17	46		90	19	38	16	16	25
N	472	311	161		58	86	216	256	254	52

Notes:
a. Self-reported, current, monthly, fair-market price (response to the question, "If you were to sell your house, how much do you think you could sell it for?").
b. Excludes imputed owner-occupied rents.
c. Includes those self-declared as "skilled" as well as "professional".

C.4 Neighborhood Social Capital and Civic Participation

Table C.4 presents findings on households' civic participation, social activism, and social capital. Twenty-one percent of households reported contacting their local council within the last two years, while 29% attended a local forum. About twice as many land/housing owners had contacted local councilors as had renters (33% vs. 17%); the same is true for attending a neighborhood forum (48% of owners vs. 23% of renters). The rates of civic participation are significantly higher in formal areas (26%) than in informal areas (17%).

Relatively few households voted in local elections (56%) compared to the 2007 elections or 2010 referendum (87% and 84%, respectively). Male-headed households were significantly more likely to vote in all three than female-headed households, and a larger proportion of owners voted in a local election than renters (69% vs. 51%). The voting trends on the 2007 elections and 2010 referendum were remarkably similar. Thirty-six percent of households reported having an informal community or neighborhood leader; this was significantly higher in formal areas than informal ones, and significantly higher among owners than renters. Five percent of households took part in a public demonstration or protest in the last two years.

The survey asked respondents whether people in their neighborhood would cooperate if asked by an official to conserve water or electricity because of an emergency, and whether people in their neighborhood look out for each other. On both questions, the results were positive. When asked if people in their community would cooperate if asked by an official, the results averaged 3 on a four-point scale (where 4="very likely" and 1="very unlikely" to cooperate). When respondents were asked if they agreed that people look out and trust each other in their neighborhood, answers averaged 3.7 on a five-point scale (where 1="strongly disagree" and 5="strongly agree"). On both questions, there were only slight differences between formal and informal areas, people with high and low access to infrastructure, and male-headed vs. female-headed households, although all of the differences were statistically significant by area.

The majority of households (69%) reported feeling safe in their neighborhood—unsurprisingly, this was significantly higher in formal areas compared to informal areas and among owners compared to renters.

Table C.4a: Neighborhood social capital and civic participation

Characteristic	All	Location		Access to infra-structure[a]		Gender (Informal)		Tenure[b]	
		Informal areas	Formal areas	Lower half	Upper half	Male-headed	Female-headed	Own	Rent
Civic participation									
Percent of households… contacting local council	21	**17**	**26**	18	26	18	17	**33**	**17**
N	740	370	370	482	258	295	69	239	501
attending a neighborhood forum	29	**25**	**36**	26	35	27	19	**48**	**23**
N	740	370	370	482	258	295	69	239	501
Social activism									
Percent of households voting in…local election[c]	56	52	61	59	50	**54**	**40**	**69**	**51**
N	740	370	370	482	258	295	69	239	501
2007 general election[c]	87	86	88	85	90	**89**	**74**	90	86
N	740	370	370	482	258	295	69	239	501
2010 referendum[c]	84	82	86	81	88	**86**	**70**	87	82
N	740	370	370	482	258	295	69	239	501
Percent of households with informal community or neighborhood leader	36	**29**	**46**	39	29	30	25	60	27
N	726	364	362	474	252	291	67	239	487
Percent of households that took part in a public demonstration or protest	5	5	4	6	3	5	6	7	4
N	740	370	370	482	258	295	69	239	501

Notes:
a. Defined by dividing the population in half based on a score assigned using responses from thirteen infrastructure-related questions (see Section 3 of Introduction).
b. Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
c. Out of all households and not just those registered to vote.

Table C.4b: Neighborhood social capital and civic participation

Characteristic	All	Location		Access to infra-structure[a]		Gender (Informal)		Tenure[b]	
		Informal areas	Formal areas	Lower half	Upper half	Male-headed	Female-headed	Own	Rent
Social capital									
Average HH response to:									
People in my neighborhood cooperate if asked by an official[c]	3	**3**	**3.2**	3	3.1	**2.9**	**3.1**	3.1	3
N	728	364	364	474	254	291	67	236	492
People in my neighborhood look out for/ trust each other[d]	3.7	**3.5**	**4**	**3.5**	**4**	3.5	3.7	3.9	3.6
N	738	368	370	480	258	294	68	239	499
Proportion of HHs feeling safe from crime in own neighborhood	69	**62**	**79**	67	72	62	64	**81**	**64**
N	740	370	370	482	258	295	69	239	501

Notes:
a. Defined by assigning scores using responses from thirteen infrastructure-related questions.
b. Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
c. Four-point scale where 1="Very unlikely" to 5="Very likely".
d. Five-point scale where 1="Strongly disagree" to 5="Strongly agree".Part D. Infrastructure Services

PART D:
INFRASTRUCTURE SERVICES

D.1a Water Access

Thirty-six percent of households have direct access to piped water (25% in compound and 11% directly into the dwelling), while 64% have nearby access (within 50 meters) to piped water. Direct access to water in the dwelling is significantly more common in formal vs. informal areas and among non-poor than poor, while access to piped water in the compound is more common in informal areas than in formal areas. Only piped water access in the compound varies significantly by respondents security in their home ownership, where "secure" represents owners who feel no one could force them to leave without an official legal process in which they would participate, "insecure" represents owners who feel they could be forced out, and "rent" represents those who rent their homes and therefore have no security of ownership as well as squatters and those who own their dwelling but not land. On average, it takes respondents about one and a half hours a day (100 minutes) to obtain water, including travel to and from the water source, waiting time, and filling time. Water costs an average of 767 KSh a month. There was not enough data at the census tract level to test for statistically significant differences between categories of households for the cost of water in time or money.

Despite the fact that 36% of households have direct access to piped water, only 10% of respondents report that piped water is their most important water source. Some 52% of households report vendors as their primary water source and another 17% report a shared yard tap as most important. There are significant differences in primary water source across several categories. By ownership status, secure households are less likely to use a vendor than insecure households and renters, and some (26%) tenure secure homes use a well/borehole as compared to virtually no insecure households or renters. Piped water is considerably more common in formal areas, where households obtain water from a variety of sources, vs. informal settlements where more households primarily obtain water from vendors and shared taps. Although few households report piped water as their primary water source, non-poor households are twice as likely as poor households to cite piped water as their primary source (14% vs. 7%).

Of the households that didn't have access to piped water, the main reason given (55%) was because they rented rather than owned their home and their landlord would not pay for a connection; the second most common reason (16%) was inability to afford the initial connection (although relatively few were unable to afford a water bill), and 10% said service was not available. There was not enough data at the census tract level to test for statistically significant differences between categories of households for the reasons for lack of access to a water connection.

Table D.1a: Water access

Characteristic	All	Security of ownership[a]			Location		House hold poverty		Gender (Informal)	
		Secure	Insecure	Rent	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with private piped water connection inside dwelling	11	7	0	12	5	**20**	**7**	**16**	5	7
N	740	200	5	535	370	370	346	362	295	69
Percent of households with piped water connection in compound	25	16	23	28	**28**	**20**	23	27	29	26
N	740	200	5	535	370	370	346	362	295	69
Percent of households close to piped water access[b]	64	<u>38</u>	<u>88</u>	<u>73</u>	<u>78</u>	<u>45</u>	<u>65</u>	<u>65</u>	<u>76</u>	<u>86</u>
N	524	171	4	349	252	272	257	242	201	47
Weekly cost of water in … Time (minutes)[c]	690	<u>1260</u>	<u>644</u>	<u>493</u>	<u>504</u>	<u>982</u>	<u>732</u>	<u>653</u>	<u>506</u>	<u>520</u>
N	539	174	4	361	270	269	267	246	209	56
Money (KSh)	767	<u>766</u>	<u>328</u>	<u>770</u>	<u>697</u>	<u>903</u>	<u>711</u>	<u>822</u>	<u>671</u>	<u>786</u>
N	597	123	3	471	353	244	273	296	283	64
Most important water source: Total	100	100	100	100	100	100	100	100	100	100
Piped	10	6	0	11	**5**	**17**	**7**	**14**	5	7
Bottled	1	0	0	1	0	1	0	1	0	0
Shared tap connection	17	10	23	19	**23**	**9**	18	17	**24**	**13**
Vendor (kiosk, tanker, other)	52	34	52	57	**63**	**35**	51	51	63	62
Neighbor(s)	6	6	0	6	6	5	**7**	**4**	5	11
Well/borehole	8	26	0	3	**2**	**17**	9	8	**1**	**5**
Natural source outside household	6	18	25	2	**1**	**13**	**7**	**4**	**0**	**2**
N	740	200	5	535	370	370	346	362	295	69
No connection due to:	100	100	100	100	100	100	100	100	100	100
Other sources available	9	<u>16</u>	<u>0</u>	<u>6</u>	<u>6</u>	<u>12</u>	<u>8</u>	<u>10</u>	<u>6</u>	<u>9</u>
Renting[d]	55	<u>2</u>	<u>46</u>	<u>73</u>	<u>68</u>	<u>35</u>	<u>55</u>	<u>53</u>	<u>70</u>	<u>58</u>
Can't afford connection	16	<u>36</u>	<u>42</u>	<u>9</u>	<u>13</u>	<u>21</u>	<u>15</u>	<u>16</u>	<u>12</u>	<u>14</u>
Can't afford monthly bill	5	<u>5</u>	<u>0</u>	<u>5</u>	<u>6</u>	<u>3</u>	<u>7</u>	<u>3</u>	<u>5</u>	<u>12</u>
Provider has waiting list	4	<u>8</u>	<u>0</u>	<u>3</u>	<u>3</u>	<u>6</u>	<u>3</u>	<u>6</u>	<u>3</u>	<u>7</u>
No service available	10	<u>30</u>	<u>12</u>	<u>4</u>	<u>3</u>	<u>21</u>	<u>11</u>	<u>11</u>	<u>4</u>	<u>0</u>
Other	1	<u>3</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>0</u>
N	520	169	4	347	251	269	254	241	200	47

Notes:
a. Self-reported; "secure" includes owners who feel no one could force them to leave without an official legal process in which they would participate, "insecure" includes owners who feel they could be forced to leave without an official legal process, and "rent" includes renters, squatters, and people who own their structure but not land.
b. Respondents were asked whether there were dwellings or businesses within 50 meters of their home that had a piped water connection in the dwelling or compound.
c. Calculated as the sum of time spent travelling, waiting in line, and filling containers.
d. House does not have a connection and landlord will not pay for one.

D.1b Water Quality

More than 50% of households rated the quality of water from their water source as "good," with the exception of those using bottled water, well/boreholes, and natural sources—in those households, nearly half or more rated the quality of water as "fair." Almost all households (96%) said they used a public water provider. In Kisumu, 73% of households treat their drinking water—this percent is significantly higher among households living in formal vs. informal areas. Of those who treat their drinking water, 60% rate their water quality as "good"; the most common method of water treatment is boiling. For water providers and treatment method, there was not enough data at the census tract level to test for significance.

Table D.1b: Water quality

Characteristic	All	House hold poverty		Location		Water quality					Gender (Informal)	
		Poor	Non-poor	Informal areas	Formal areas	Good	Fair	Poor	Total	N	Male-headed	Female-headed
Water source:[a] Piped	10	**7**	**14**	**5**	**17**	*86*	*14*	*0*	100	68	5	7
Bottled	1	0	1	0	1	47	*53*	0	100	6	0	0
Shared tap connection	17	18	17	**23**	**9**	51	*46*	3	100	123	**24**	**13**
Other vendor	52	51	51	**63**	**35**	67	*29*	4	100	350	63	62
Neighbor(s)	6	**7**	**4**	6	5	76	*23*	1	100	44	5	11
Well/Borehole	8	9	8	2	17	*21*	*76*	2	100	68	**1**	**5**
Natural outside-HH source	6	**7**	**4**	1	13	*33*	*47*	20	100	73	**0**	**2**
N	740	346	362	370	370	445	259	36			295	69
Water provider: Public	96	100	93	94	99	65	33	2	100	206	97	77
Private	2	0	4	4	0	61	39	0	100	5	1	16
Self	1	0	1	1	0	100	0	0	100	1	0	7
Community	1	0	2	2	1	9	91	0	100	4	2	0
N	216	89	120	118	98	144	67	5			94	22
Percent of households treating drinking water	73	72	75	**68**	**81**	60	36	4	100	545	66	74
N	740	346	362	370	370	445	259	36			295	69
Treatment method:[b] Boiling	27	19	34	23	32	67	29	4	100	144	23	22
Add bleach/chlorine	20	85	76	86	73	57	38	5	100	434	196	51
Other (sieve, filter, settle)	1	2	1	1	2	44	56	0	100	7	**0**	**4**
N	545	250	273	252	293	316	202	27			196	51

Notes:
a. *Most important water source.*
b. *Since multiple responses were permitted, the sum can exceed 100%. Likewise, "Other" is not shown, since it was negligible, so the sum may also be less than 100%.*

D.2a Electricity and Waste-Disposal Services

Fifty-three percent of respondents reported access to electricity, a figure that differs significantly by poverty level (62% of non-poor have access vs. 45% of the poor) and location; surprisingly, the percentage with electricity is significantly lower in formal areas than informal areas (46% in formal vs. 58% in informal). Reasons for not having a connection are similar to those for water—the primary reason reported was that households did not own their home and didn't have a choice (51%), followed by inability to pay for the initial connection (33%). In this section there were not enough observations at the census tract level to test for differences among different categories of households.

Only 2% of respondents reported functional street lighting in their area. The average monthly cost of electricity is 944 KSh, with 3% of households not paying for electricity at all. Sixty-nine percent of households pay a utility company, while the remaining households either pay as part of their rent or directly to their landlord (11%), or pay a third party (17%). In Kisumu, 37% of households experience power outages at least once per week.

To dispose of their garbage, most households either burn (46%) or dump (36%) their trash; only 13% dispose of refuse through a city, community, or private collection system. Sixty percent of households report they must pay for garbage collection. Utilization of a collection system is twice as common in formal areas than informal ones; dumping is more common in informal areas. Dumping is significantly more common and a collection system is less common among poor households than non-poor households. Interestingly, the proportion of female-headed households that use a collection system to dispose of refuse is three times that of male-headed households (21% vs. 6%). Additionally, twice as many male-headed households burn their refuse vs. female-headed (44% vs. 21%).

Table D.2a: Access to electricity and waste-disposal

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-head-ed	Female-head-ed
Electricity							
Proportion of households with access to electricity	53	**58**	**46**	**45**	**62**	59	52
N	740	370	370	346	362	295	69
Reason for no connection: Total	100	100	100	100	100	100	100
Renters	51	<u>70</u>	<u>29</u>	<u>51</u>	<u>50</u>	<u>74</u>	<u>58</u>
Firm has waiting list	4	<u>2</u>	<u>8</u>	<u>4</u>	<u>5</u>	<u>1</u>	<u>3</u>
Cannot afford connection	33	<u>14</u>	<u>55</u>	<u>34</u>	<u>33</u>	<u>12</u>	<u>23</u>
Cannot afford monthly bill	8	<u>13</u>	<u>3</u>	<u>8</u>	<u>9</u>	<u>12</u>	<u>16</u>
Other	3	<u>1</u>	<u>6</u>	<u>3</u>	<u>3</u>	<u>1</u>	<u>0</u>
N	373	153	220	204	152	121	31
Percent of households with mostly functioning street lighting	2	1	3	2	2	0	4
N	740	370	370	346	362	295	69
Average monthly bill, KSh	945	<u>786</u>	<u>1210</u>	<u>776</u>	<u>1074</u>	<u>705</u>	<u>1144</u>
N	740	370	370	346	362	295	69
Percent of households not paying for electricity	3	2	4	1	3	2	0
N	255	142	113	104	140	114	24
Payment to: Total	100	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
Utility	69	<u>60</u>	<u>85</u>	<u>60</u>	<u>76</u>	<u>57</u>	<u>79</u>
Prepaid card	2	<u>0</u>	<u>6</u>	<u>2</u>	<u>3</u>	<u>0</u>	<u>0</u>
Landlord	11	<u>15</u>	<u>5</u>	<u>15</u>	<u>9</u>	<u>18</u>	<u>3</u>
Third party (from utility power line)	17	<u>25</u>	<u>4</u>	<u>23</u>	<u>12</u>	<u>25</u>	<u>18</u>
N	244	139	105	102	133	111	24
Percent of households with outages at least once weekly	37	<u>46</u>	<u>20</u>	<u>43</u>	<u>34</u>	<u>47</u>	<u>42</u>
N	364	216	148	141	208	174	37
Refuse disposal							
Main method:							
Dumping	36	41	30	**43**	**29**	**44**	**21**
Burying	5	4	5	3	6	4	3
Burning	46	46	46	46	46	45	53
Collection system(a)	13	**9**	**18**	**8**	**18**	**6**	**21**
N	740	370	370	346	362	295	69
Proportion of HHs paying for collection	60	<u>59</u>	<u>61</u>	<u>65</u>	<u>55</u>	<u>61</u>	<u>57</u>
N	95	37	58	28	63	21	15

Run by city, community, or private firm.

D.2b Access to Sanitation Services

Only 15% of households have a toilet in their home, but a private toilet is twice as common among non-poor households as it is among poor households and three times higher in formal areas than informal ones. Most households use either a public/shared latrine (46%) or an individual pit latrine (32%); flush toilets are less common (17%). In formal areas, flush toilets are significantly more common while public/shared latrines are significantly less common than in informal areas. The use of flush toilets is also much higher in non-poor vs. poor households and in female-headed households vs. male-headed households. Twenty-two percent of households report they do not share their toilet with other households, while the remaining 78% do so. By area, the differences in sharing are significant and large; in formal areas, 41% of households have their own toilet, while in informal areas only 9% have their own toilet; this also varies significantly by poverty status. Interestingly, significantly more female-headed households have their own toilet.

The majority of households (81%) use a pit latrine as their toilet disposal system. Pit latrine disposal is significantly higher in informal areas vs. formal, among poor vs. non-poor households, and among male-headed vs. female-headed households; the opposite is true for disposing legally into the sewer. Although use of use septic tanks/soak pits is low, households in formal areas use them more frequently than in informal areas.

Grey water, i.e. used kitchen or bath water, is poured onto the road by 47% of households and dumped into a nearby drain by 44% of households. There are few noteworthy significant differences in grey water disposal by category of household, other than the fact that poor households are more likely to pour grey water onto the road than non-poor households.

Table D.2b: Access to sanitation

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-head-ed
Percent of households with toilet in home	15	**6**	**30**	**10**	**20**	5	10
N	737	368	369	345	360	293	69
Type of toilet system: Total							
Pit latrine (individual)	32	31	35	**37**	**28**	29	33
VIP latrine	2	1	2	2	1	1	2
Flush toilet/WC	17	**8**	**31**	**12**	**23**	**5**	**16**
Public/shared latrine	46	**58**	**27**	**44**	**46**	**62**	**46**
Paid shared latrine	0	0	0	0	0	0	0
N	737	368	369	345	360	293	69
Percent of households sharing toilet:							
Doesn't share	22	**9**	**41**	**16**	**28**	**7**	**19**
Shares with 2-9 other households	55	55	55	59	51	57	48
Shares with 10+ other households	23	**36**	**4**	25	21	36	33
N	715	359	356	329	354	286	67
Type of disposal system for toilet:							
Total	100	100	100	100	100	100	100
Pit latrine	81	**91**	**66**	**87**	**76**	**93**	**83**
Sewer (legal)	12	**5**	**23**	**9**	**17**	**4**	**12**
Sewer (informal)	0	0	0	0	0	0	0
Septic tank/soak pit	6	3	9	4	7	2	4
N	716	360	356	328	356	288	66
Disposal of "grey water": Total							
Total	100	100	100	100	100	100	100
Dump into drain	44	41	49	41	50	43	37
Pour onto road	47	49	44	**52**	**40**	49	48
Pour into latrine	5	**7**	**2**	4	6	6	11
Other	4	3	5	3	4	3	5
N	739	369	370	346	361	294	69

D.3 Access to Transport

Thirty-seven percent of all household members work inside their settlement or neighborhood, while 59% work outside and 4% work both inside and outside. The percentages of members working inside and outside the neighborhood vary significantly by area type and gender of household head, with people in informal areas and male-headed households more likely to be working outside of the neighborhood while formal areas and female-headed households are divided more evenly between inside and outside the neighborhood. The main modes of travel to work or school are walking (62%) and matatus (26%).[15] Students, people in informal areas, poor households, and female-headed households are significantly more likely to walk, and typically less likely to use a matatu. One percent of household members in the highest spending quartile drove to work or school in their own vehicle.

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[15]   A "matatu" is a 14-seater minivan used throughout Kenya as a form of public transport.

The average time it takes household members to get to work/school is 24 minutes and the average cost is 71 KSh. There are no notable or significant differences in transportation costs by category.

Seventy-one percent of households reported having good road access; this is significantly higher in formal areas than informal ones. Twenty-one percent of all households said they had limited road access during the rainy season.

Table D.3: Access to transport

Characteristic	All	HH activity[a]		Location		House hold poverty		Gender (Informal)	
		Work	Study	Infor-mal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent who work or study…									
inside the neighborhood	37			**33**	**44**	37	36	**31**	**43**
outside the neighborhood	59			**63**	**52**	60	60	**66**	**54**
inside and outside the neighborhood	4			4	4	4	3	3	4
N	1,175			591	584	547	576	484	104
Main mode of travel[b] Walk	62	**53**	**70**	62	61	<u>66</u>	<u>57</u>	62	62
Bicycle	3	**4**	**1**	3	3	<u>3</u>	<u>3</u>	3	1
Own vehicle	1	1	0	**0**	**2**	<u>0</u>	<u>2</u>	0	0
Matatu	26	31	21	26	26	<u>23</u>	<u>29</u>	25	30
Shared taxi	0	0	0	0	0	<u>0</u>	<u>0</u>	0	0
Bike taxi	5	7	6	6	4	<u>5</u>	<u>5</u>	7	5
Municipal bus	1	0	0	0	1	<u>1</u>	<u>1</u>	1	0
N	1,876	460	458	918	958	921	861	743	171
Transport time (minutes)	24	**23**	**24**	23	25	<u>24</u>	<u>24</u>	24	23
N	1,808	441	449	890	918	895	825	718	168
One-way trip cost to work/school (KSh)	71	<u>65</u>	<u>67</u>	<u>66</u>	<u>79</u>	<u>82</u>	<u>62</u>	<u>64</u>	<u>73</u>
N	588	184	130	314	274	259	306	247	65
Households with road access as: Poor	29			**38**	**16**	31	27	39	31
Good	71			**62**	**84**	69	73	61	69
N	740			370	370	346	362	295	69
Percent of households with limited road access during rainy season	21			23	17	24	19	25	17
N	740			370	370	346	362	295	69

Notes:
a. *Informal areas only.*
b. *To work or to school. May not add to 100% since "Other", which was negligible, is not reported in table.*

D.4 Access to Communications

Only 1% of households have a functioning land line, but each household owns an average of nearly two mobile phones, and there is a small but statistically significant increase in the number of mobile phones owned by non-poor vs. poor households. Mobile banking (such as M-PESA) is nearly ubiquitous, with 89% of households utilizing the service, and significantly more in male-headed households than female-

headed households. Similarly, the rate of mobile banking usage increases significantly for non-poor vs. poor households. Overall, only 8% of households have a functioning computer, but this rate is twice as high in formal areas vs. informal ones and for non-poor vs. poor, and the differences are significant. Twenty-four percent of households use the internet. Internet use is twice as high among non-poor vs. poor households (31% vs. 16%) and between female-headed households and male-headed households (38% vs. 18%), but internet use does not vary significantly by location.

Table D.4: Access to communications

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with functioning land line	1	1	2	1	2	1	1
N	740	370	370	346	362	295	69
Average number of mobile phones owned by household	1.8	1.8	1.9	**1.7**	**2.0**	1.8	1.5
N	736	368	368	343	361	295	67
Percent of households using mobile banking	89	90	87	**85**	**93**	**91**	**81**
N	739	369	370	346	361	294	69
Percent of households with functioning computer	8	**6**	**12**	**5**	**11**	6	7
N	739	370	369	346	361	295	69
Percent of households using internet (any means)	24	22	27	**16**	**31**	**18**	**38**
N	739	370	369	346	361	295	69

D.5 Access to Infrastructure Indicator

The access to infrastructure indicator combines six categories of infrastructure (divided into 13 subcategories) weighted by importance to the household and summed to create a household indicator from 0 to 9.5.[16] Higher scores represent better access to infrastructure. This indicator provides an overall understanding of a household's infrastructure access. By averaging households' scores on the indicator, we can quickly compare infrastructure access in informal and formal areas, between poor and non-poor households, and between male- and female-headed households in informal areas.

Table D.5 presents household mean scores on the access-to-infrastructure indicator. The mean score across all households in Kisumu is 3.5. Households in formal areas score significantly higher than households in informal areas, and the difference in mean scores is nearly one, which is notable—this means that on average informal area households have one less service available to them. There are also significant differences between poor and non-poor households (3.83 and 3.17) and male- and female-headed households in informal areas (3.08 vs. 3.48), but the magnitude of these differences is only about one-half the difference between formal and informal areas.

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[16] The 13 subcategories are: piped water (1 point); shared/indirect connection (0.5 points); direct electricity access (1); street lighting (0.5); garbage collection system (1); own toilet (1); shared toilet with less than 20 other people (0.5); legal sewer system for toilet (0.5); grey water not poured onto street (0.5); good road access at dwelling (0.5); road access not limited during rainy season (0.5); no flooding (1); no mudslides (1).

Table D.5: Access to infrastructure indicator

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Fe-male-head-ed
Mean score on access to infrastructure indicator	3.50	**3.16**	**4.01**	**3.17**	**3.83**	**3.08**	**3.48**
N	740	370	370	346	362	295	69

CONCLUSIONS

The following three figures are "Development Polygons". These polygons are meant to complement the detailed tables presented in sections A through D by illustrating an "overall" sense of the state of the city. We present information for all areas, along with formal and informal areas, in each of the three figures: the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.[17] In all figures, the value labels included provide the value of the indicator for all areas. The statistics underlying these figures are also in the tables, above. Similar graphics also appear in the City-at-a-Glance Reports and the Overview Report produced under the NORC contract.

The axes for all figures represent percentages. Polygons with larger areas represent "better" situation in regards to the associated indicator(s). Hence, a polygon with full coverage would indicate that the city is doing very well in terms of development, infrastructure, or living conditions.

Figure 1: Development diamond

The Development Diamond (Figure 1) maps four indicators of poverty—welfare, employment, education, and living conditions. In three quarters of the development diamond—welfare, employment, and education —formal and informal areas are similarly situated. The biggest difference of the three is in employment, where 60% of adults in informal areas are working compared to 51% in formal areas. The fourth indicator, living conditions, presents the percentage of households with permanent walls and access to both piped water and electricity. In formal areas, 18% of households meet these three qualifications, but in informal areas only 4% of households meet them.

Figure 2: Infrastructure polygon

The Infrastructure Polygon, shown in Figure 2, presents residents' access to ten different types of infrastructure—piped water, electricity, private toilets, sewage, drainage, garbage collection, street lighting, mobile phones, public transport, and good roads. The percent of households with piped water, drainage, street lighting, mobile phones, and public transport are about the same in formal and informal areas. Overall, about 31% have piped water, 42% have drainage outside their home for storm water, 2% have street lighting, 91 percent own one or more mobile
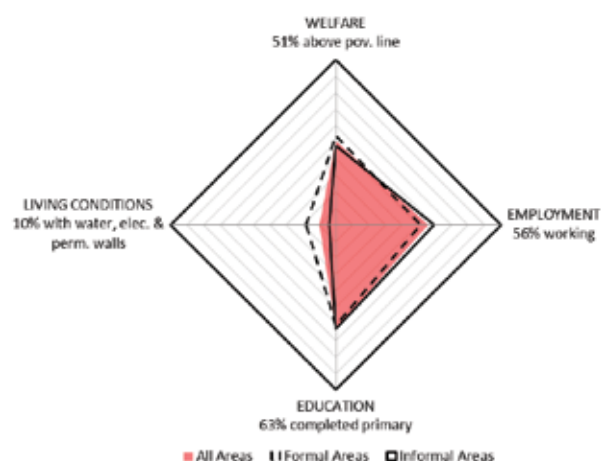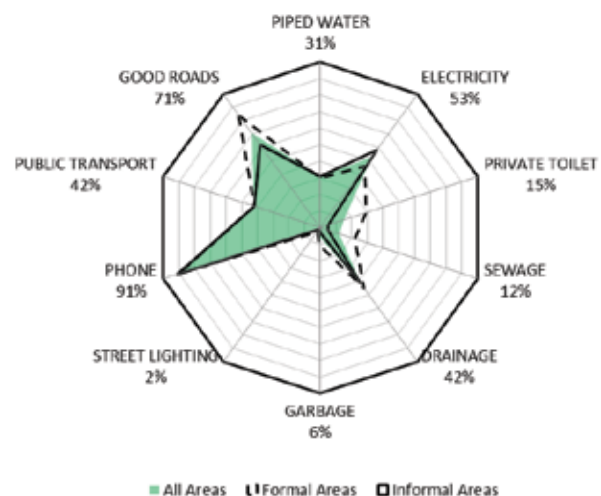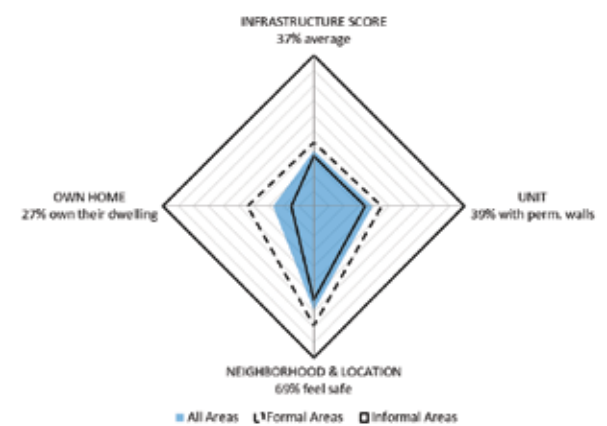
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[17] The basic format for all three figures appear in the World Bank Policy Research Working Paper, "Poverty, Living Conditions, and Infrastructure Access" A Comparison of Slums in Dakar, Johannesburg, and Nairobi" by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

phones, and 42% use public transport. Surprisingly, more households in informal areas (58%) than formal areas (46%) reported having electricity. Private toilets are about 6 times as common in formal areas (29% of households) as they are in informal areas (5%), while sewage and garbage collection are each about 4 times as common (22% sewage in formal areas vs. 5% in informal areas; 11% garbage collection in formal areas vs 3% in informal areas). Finally, about 84% of households in formal areas reported that their access road was in good condition, compared to just 62% of households in informal areas.

Figure 3 presents the Living Conditions Diamond. The four axes of this diamond are the infrastructure score (scaled to a percentage of the total possible points), unit conditions, neighborhood and location, and home ownership. The first two indicators have coverage just below 40%, with informal areas scoring below formal areas by about 10%. Most households (69%) feel safe in their neighborhood, though this is much higher in formal areas (79%) than informal areas (62%). Finally, 27% of all households own their dwelling. However, the rate of home ownership is three times higher in formal areas (44%) than in informal areas (15%).

Figure 3: Living conditions diamond

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